THE CLAIMS

What is claimed is:

1. A sternal reconstruction system for securing parts of a sternum comprising:

a flexible cable having first and second ends;

a crimp fitting member;

at least one cannulated screw; and

at least one reconstruction plate,

wherein the first end of the cable comprises a crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head.

2. The flexible cable of claim 1, wherein the crimp fitting member comprises a preinstalled flattened disk-like crimp head having a diameter of from about 2mm to about 10mm and a thickness of from about 0.1mm to about 4mm.

3. The sternal reconstruction system of claim 2, wherein the crimp fitting member is constructed from a material selected from the group consisting of titanium, alloys of titanium, stainless steel and resorbable materials.

4. The flexible cable of claim 2, wherein the crimp head is round.

5. The flexible cable of claim 2, wherein the crimp head is square, rectangular or other polygon shape.

6. The flexible cable of claim 2, wherein the crimp head comprises an upper surface and a lower surface.

7. The flexible cable of claim 6, wherein the upper surface of the crimp head has rounded edges.

8. The flexible cable of claim 6, wherein the lower surface of the crimp head is designed to mate with the top surface of a cannulated screw or reconstruction plate.

9. The flexible cable of claim 6, wherein the lower surface of the crimp head is flat.

10. The flexible cable of claim 2, wherein the crimp head comprises a diametrical hole.

11. The flexible cable of claim 10, wherein the diametrical hole is sized so as to accommodate the flexible cable.

12. The flexible cable of claim 2, wherein the crimp fitting member further comprises a crimp shaft, the crimp shaft extending perpendicular to the lower surface of the crimp fitting.

13. The flexible cable of claim 12, wherein the crimp shaft is cylindrically shaped.

14. The flexible cable of claim 12, wherein the crimp shaft has a non-circular cross-section.

15. The flexible cable of claim 14, wherein the non-circular cross-section of the crimp shaft engages a non-circular recess formed in a cannulated screw and prevents rotation of the crimp fitting in the cannulated screw.

16. The flexible cable of claim 12, wherein the crimp shaft is located on the lower surface of the crimp head such that the perimeter of the lower surface of the crimp head surrounds the crimp shaft and provides an annular bearing surface.

17. The flexible cable of claim 16, wherein the width of the annular bearing surface is from about 0.5mm to about 3mm.

18. The flexible cable of claim 12, wherein the crimp shaft is from about 0.7mm to about 4mm in diameter, and from about 1.5mm to about 4mm in length.

19. The flexible cable of claim 18, wherein the crimp shaft is sized and shaped so as to fit within a cannulated screw or bone reconstruction plate.

20. The sternal reconstruction system of claim 1, wherein the flexible cable having first and second ends is selected from the group consisting of a single strand wire and a multi-wire stranded cable.

21. The sternal reconstruction system of claim 20, wherein the flexible cable is Cerclage wire.

22. The sternal reconstruction system of claim 1, wherein the second end of the cable comprises a thermally fused end.

23. The sternal reconstruction system of claim 22, wherein the second end of the cable further comprises a suture.

24. The sternal reconstruction system of claim 23, wherein the suture is constructed from a material selected from the group consisting of titanium, alloys of titanium and stainless steel.

25. The sternal reconstruction system of claim 23, wherein the suture is designed to be removable while preserving the thermally fused end of the cable.

26. The sternal reconstruction system of claim 1, wherein the flexible cable is constructed from a material selected from the group consisting of titanium, alloys of titanium, stainless steel and resorbable materials.

27. The sternal reconstruction system of claim 1, wherein the reconstruction plate has a longitudinal axis and comprises an upper and a lower surface, and at least one hole passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis for receiving a bone anchor, the at least one reconstruction plate further including at least one bore disposed transverse to the generally perpendicularly disposed plate hole

28. The sternal reconstruction system of claim 1, further comprising at least two reconstruction plates.

29. The sternal reconstruction system of claim 1, wherein the at least one reconstruction plate comprises a plurality of holes passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis for receiving bone anchors.

30. The sternal reconstruction system of claim 29, further comprising a plurality of bores disposed transverse to the generally perpendicularly disposed plate holes.

31. The sternal reconstruction system of claim 30, wherein the plurality of holes passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis are round and cylindrical.

32. The sternal reconstruction system of claim 30, wherein the plurality of holes disposed transverse to the generally perpendicularly disposed plate holes are round and cylindrical.

33. The sternal reconstruction system of claim 31, wherein the plurality of holes passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis are countersunk toward either the upper or the lower surfaces of the reconstruction plate.

34. The sternal reconstruction system of claim 31, wherein the plurality of holes passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis are countersunk toward both the upper and the lower surfaces of the reconstruction plate.

35. The sternal reconstruction system of claim 34, wherein the plurality of holes are countersunk in the shape of a cone.

36. The sternal reconstruction system of claim 29, wherein the generally perpendicular plate holes are each independently angled at a solid angle of from 0° to about 30° from normal to the upper and lower surfaces of the reconstruction plate.

37. The sternal reconstruction system of claim 36, wherein the generally perpendicular plate holes are each independently angled at an angle of from 0° to about 30° from normal to the upper and lower surfaces of the reconstruction plate and along longitudinal axis 19.

38. The sternal reconstruction system of claim 36, wherein the generally perpendicular holes are normal to the upper and lower surfaces of the reconstruction plate.

39. The sternal reconstruction system of claim 30, wherein the generally transverse plate holes are each independently angled at a solid angle of from 0° to about 30° from normal to the side surfaces of the reconstruction plate.

40. The sternal reconstruction system of claim 39, wherein the generally transverse plate holes are each independently angled at an angle of from 0° to about 30° from normal to the side surfaces of the reconstruction plate and transverse to longitudinal axis.

41. The sternal reconstruction system of claim 39, wherein the generally transverse holes are normal to the side surfaces of the reconstruction plate.

42. The sternal reconstruction system of claim 29, wherein the plurality of generally perpendicular plate holes is configured to lock with a bone fastener.

43. The sternal reconstruction system of claim 31, wherein the upper and lower surfaces of the reconstruction plate are planar.

44. The sternal reconstruction system of claim 31, wherein the reconstruction plate is constructed from a material selected from the group consisting of titanium, alloys of titanium, stainless steel, resorbable materials, radio-translucent materials, allograft materials and resorbable materials.

45. The sternal reconstruction system of claim 1, wherein the at least one cannulated screw is selected from the group consisting of a locking and a non-locking screw.

46. The sternal reconstruction system of claim 45, wherein the at least one cannulated screw is at least partially threaded for attachment to bone.

47. The sternal reconstruction system of claim 45, wherein the at least one cannulated screw is constructed from a material selected from the group consisting of titanium, alloys of titanium, stainless steel and resorbable materials.

48. The sternal reconstruction system of claim 45, wherein the at least one cannulated screw comprises a head having a top surface, wherein the top surface may be curved, substantially flat or have other complex geometry.

49. A flexible cable for sternal reconstruction, the cable having first and second ends, wherein the first end of the cable comprises a crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head.

50. The flexible cable of claim 49, wherein the crimp fitting member comprises a flattened disk-like crimp head having a diameter of from about 2mm to about 10mm and a thickness of from about 0.1mm to about 4mm.

51. The flexible cable of claim 50, wherein the crimp head comprises an upper surface and a lower surface.

52. The flexible cable of claim 51, wherein the lower surface of the crimp head is flat.

53. The flexible cable of claim 50, wherein the crimp head comprises a diametrical hole.

54. The flexible cable of claim 53, wherein the diametrical hole is sized so as to accommodate the flexible cable.

55. The flexible cable of claim 50, wherein the crimp fitting member further comprises a crimp shaft, the crimp shaft extending perpendicular to the lower surface of the crimp fitting.

56. The flexible cable of claim 55, wherein the crimp shaft is cylindrically shaped.

57. The flexible cable of claim 55, wherein the crimp shaft has a non-circular cross-section.

58. The flexible cable of claim 55, wherein the crimp shaft is located on the lower surface of the crimp head such that the perimeter of the lower surface of the crimp head surrounds the crimp shaft and provides an annular bearing surface.

59. The flexible cable of claim 58, wherein the width of the annular bearing surface is from about 0.5mm to about 3mm.

60. The flexible cable of claim 55, wherein the crimp shaft is from about 0.7mm to about 4mm in diameter, and from about 1.5mm to about 4mm in length.

61. The flexible cable of claim 60, wherein the crimp shaft is sized and shaped so as to fit within a cannulated screw or bone reconstruction plate.

62. A method for sternal reconstruction, comprising the steps of:

wrapping a flexible cable having first and second ends around the sternum;

tensioning the flexible cable to a desired tension; and

securing the tensioned cable,

wherein the first end of the cable comprises a crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head.

63. The method of claim 62, wherein the tensioned cable is secured by crimping a ferrule onto the flexible cable.

64. The method of claim 63, wherein the inner diameter of the ferrule comprises a sharp edge in order to facilitate the cutting of the flexible cable during crimping of the ferrule onto the flexible cable.

65. A method for sternal reconstruction, comprising the steps of:

attaching at least one cannulated screw into the sternum;

feeding a flexible cable having first and second ends through the lumen of the at least one cannulated screw;

wrapping the flexible cable around the sternum;

tensioning the flexible cable to a desired tension; and

securing the tensioned cable,

wherein the first end of the cable comprises a crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head.

66. The method of claim 65, wherein the tensioned cable is secured by crimping a ferrule onto the flexible cable.

67. The method of claim 66, wherein the inner diameter of the ferrule comprises a sharp edge in order to facilitate the cutting of the flexible cable during crimping of the ferrule onto the flexible cable.

68. A method for sternal reconstruction comprising the steps of:

attaching at least one reconstruction plate to a sternum using cannulated screws;

feeding a flexible cable having first and second ends through the lumen of at least one cannulated screw and/or through the at least one hole disposed transverse to the generally perpendicularly disposed plate hole, wherein the first end of the cable comprises a

crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head;

tensioning the flexible cable to a desired tension; and

securing the tensioned cable.

69. The method of claim 68, wherein the tensioned cable is secured by crimping a ferrule onto the flexible cable.

70. The method of claim 69, wherein the inner diameter of the ferrule comprises a sharp edge in order to facilitate the cutting of the flexible cable during crimping of the ferrule onto the flexible cable.

71. A method for sternal reconstruction comprising the steps of:

attaching at least one reconstruction plate to a sternum using cannulated screws, wherein said reconstruction plate has a longitudinal axis and comprises an upper and a lower surface, and at least one hole passing through the upper and lower surfaces and generally perpendicular to the longitudinal axis for receiving a fastener head, the at least one reconstruction plate further including at least one bore disposed transverse to the generally perpendicularly disposed plate hole;

feeding flexible cable having first and second ends through the lumen of at least one cannulated screw and/or through the at least one hole disposed transverse to the generally perpendicularly disposed plate hole, wherein the first end of the cable comprises a crimp fitting member, and wherein the crimp fitting member comprises a flattened disk-like head;

tensioning the flexible cable to a desired tension; and

securing the tensioned cable.

72. The method of claim 71, wherein at least one reconstruction plate is attached to the sternum on opposite sides of the sternal fragments

73. The method of claim 71, wherein the tensioned cable is secured by crimping a ferrule onto the flexible cable.

74. The method of claim 73, wherein the inner diameter of the ferrule comprises a sharp edge in order to facilitate the cutting of the flexible cable during crimping of the ferrule onto the flexible cable.

75. A sternal reconstruction kit comprising:

at least one flexible cable;

at least one cannulated screw; and

at least one reconstruction plate.

76. The sternal reconstruction kit of claim 75, further comprising a plurality of cannulated screws and/or a plurality of reconstruction plates.

77. The sternal reconstruction kit of claim 75, wherein at least one flexible cable is attached to a suture.

78. The sternal reconstruction kit of claim 77, further comprising a plurality of sizes of cannulated screws and/or a plurality of sizes of reconstruction plates.

79. The sternal reconstruction kit of claim 75, further comprising at least one ferrule.

80. The sternal reconstruction kit of claim 79, wherein the inner diameter of the at least one ferrule comprises a sharp edge in order to facilitate the cutting of the flexible cable during crimping of the ferrule onto the flexible cable.